

**METHOD AND SYSTEM FOR A LONG DISTANCE CONFERENCE CALL
DISCOUNT FEATURE**

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Field of the Invention

This invention relates generally to telecommunications, and more particularly relates to a method and system for providing a long distance conference call discount feature.

Background of the Invention

10 A wide range of telecommunication services including local area and long distance wireline and a variety of wireless telephone services are increasingly available and are being utilized by a wide range of telephone service subscribers for work, education, recreation, and the like. In order to remain competitive, providers of telecommunications services offer a number of features designed to allow subscribers to
15 make the most efficient use of telecommunications services. For example, a telecommunications service provider may offer a set of features such as caller identification, call return, conference calling, etc. for a flat monthly fee. While these sets of features provide some revenue to a service provider, the revenue may not be as great as long distance revenue.
20 However, the long distance market is highly competitive. Telecommunications service providers offer all different types of plans and discounts to influence customers to switch their long distance service. Telecommunications service providers will sometimes undercut each other with these plans to obtain a customer's business. Thus, loyal customers are difficult for a telecommunications service provider
25 to maintain. There is a need for an incentive for loyal customers to maintain their local and long distance service with their existing telecommunications service provider. There is a further need to leverage existing features, such as those described above, to maintain customer loyalty and provide benefits to the customer. There is a further need

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to encourage customers to increase long distance usage through enhanced customer discounts and use of existing features.

It is with respect to these considerations and others that the present invention is described.

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Summary of the Invention

In accordance with the present invention, the above and other problems are solved by a method and system for providing a long distance conference call discount feature. When a subscriber initiates a conference call to two or more long distance numbers, a discount may be provided to some of the long charges. In a 10 preferred embodiment of the present invention, the discounts are applied by a billing system. Call detail records for calls on a per call basis both in the wireline local and long distance setting and any wireless setting are assembled at a telecommunications service provider billing system for preparation of periodic billing to a subscriber. A conference call discount feature engine reviews a periodic billing record and determines 15 if a conference call to two or more long distance numbers has been made by the customer. In a preferred embodiment of the invention, a conference call may be found by searching the periodic billing record for overlapping long distance usage (when two or more long distance calls from the same telephone line have overlapping time periods). The call with the lowest long distance charges is determined and its long 20 distance charges are reduced by a predetermined amount, such as five percent. The reduced long distance charges are saved in a new periodic billing record associated with the billing telephone number. Thus, in this embodiment, the present invention provides an incentive for a customer to make a conference call to two or more long distance numbers resulting in larger revenue for the service provider (because of the multiple 25 long distance calls).

These and other features and advantages, which characterize the present invention, will be apparent from a reading of the following detailed description and a review of the associated drawings. It is to be understood that both the foregoing

general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention, as claimed.

Brief Description of the Drawings

Fig. 1 is a block diagram illustrating components of a wireline and
5 wireless telephone network that provides an exemplary operating environment for the present invention.

Fig. 2 is a block diagram illustrating the system architecture of an exemplary embodiment of the present invention.

10 Fig. 3 illustrates an operational flow of the steps performed in providing a multiple line long distance discount feature in accordance with an embodiment of the present invention.

Detailed Description

In accordance with an exemplary embodiment of the present invention a method and system for providing a long distance conference call discount feature is
15 described. When a subscriber initiates a conference call to two or more long distance numbers, a discount may be provided to some of the long charges. In a preferred embodiment of the present invention, the discounts are applied by a billing system. Call detail records for calls on a per call basis both in the wireline local and long distance setting and any wireless setting are assembled at a telecommunications service provider
20 billing system for preparation of periodic billing to a subscriber. A conference call discount feature engine reviews a periodic billing record and determines if a conference call to two or more long distance numbers has been made by the customer. In a preferred embodiment of the invention, a conference call may be found by searching the periodic billing record for overlapping long distance usage (when two or more long
25 distance calls from the same telephone line have overlapping time periods). The call with the lowest long distance charges is determined and its long distance charges are reduced by a predetermined amount, such as five percent. The reduced long distance charges are saved in a new periodic billing record associated with the billing telephone

number. Thus, in this embodiment, the present invention provides an incentive for a customer to make a conference call to two or more long distance numbers resulting in larger revenue for the service provider (because of the multiple long distance calls).

The present invention is advantageous in enhancing customer service
5 and increasing customer loyalty to telecommunications service providers. For example, good will is established with a customer who is receiving a discount and the customer will be less likely to change long distance service providers.

Exemplary Operating Environment

Fig. 1 is a block diagram illustrating components of a wireline and
10 wireless telephone network that provides an exemplary operating environment for the present invention. Referring now to the drawings, in which like numerals represent like elements throughout the several figures, aspects of the present invention, the advanced intelligent network (AIN) and an integrated wireless network will be described.

The public switched telephone network that evolved in the 1980s
15 incorporated the advanced intelligent network (AIN). Some of the components of the advanced intelligent network are illustrated in Fig. 1. Fig. 1 is a block diagram representing at least a part of the advanced intelligent network (AIN) 100 of a typical local exchange carrier integrated with components of a wireless network 150. The advanced intelligent network (AIN) uses the signaling system 7 (SS7) network for
20 signal or system control message transport. The components thereof are well-known to those skilled in the art. The operation of many of the components of the advanced intelligent network is also described in U.S. Pat. No. 5,245,719 to Weisser entitled "Mediation of Open Advanced Intelligent Network Interface by Shared Execution Environment" which is incorporated herein by reference. The SS7 communications
25 protocol is provided in the document entitled "Bell Communications Research Specification of Signaling System 7," Document TR-NWT-000246, Issue 2 (June 1991), plus Revision 1 (December 1991), which is also incorporated herein by reference.

A plurality of central offices is provided in a typical public switched
30 telephone network. As shown in Fig. 1, each central office may include an electronic

switch known to those skilled in the art as a service switching point (SSP). These are indicated in Fig. 1 as SSP switches 12 and 14. The number of SSP switches depends on the number of subscribers to be served by the public switched telephone network. An SSP is the AIN component of a typical electronic central office switch used by a local exchange carrier. The terms "SSP" and "switch" are used interchangeably hereinafter and are understood to refer to a telecommunications switch having AIN capability and which may be utilized for connecting voice channel circuits, including voice channel lines, such as trunk circuit 30.

As shown in Fig. 1, central offices switches (SSP) 12 and 14 have a plurality of subscriber lines 18 and 20 connected thereto. Each of the subscriber lines 18 and 20 is connected to a terminating piece or pieces of customer premises equipment that are represented by telephones 21 and 24. SSP switches 12 and 14 are connected by a plurality of trunk circuits 30. These are the voice path trunks that interconnect the central offices 12 and 14 and over which calls are connected when completed.

Each piece of terminating equipment in the PSTN is preferably assigned a directory number. The term "directory number" is used herein in a manner consistent with its generally understood meaning of a number that is dialed or input by an originating party at an originating station to reach a terminating station associated with the directory number. A directory number, typically a ten digit number, is commonly referred to as a "telephone number" and may be assigned to a specific telephone line, such as the telephone line 18 shown in Fig. 1.

Much of the intelligence and the basis for many of the enhanced features of the network reside in the local AIN service control point (SCP) 42 that is connected to signal transfer point 34 via SS7 data link 44. As is known to those skilled in the art, relatively powerful fault tolerant computers physically implement AIN service control points, such as AIN SCP 42. Among the functions performed by the service control points is maintenance of network databases used in providing enhanced services.

Additional devices for implementing advanced network functions within the AIN 10 are provided by regional STPs (not shown), regional AIN SCPs (not shown), and a service management system (SMS) 46. The STP 34 is connected to the

SSPs via connections 36 and 38. Both the regional AIN SCPs and the local AIN SCP 42, which represent a plurality of local AIN SCPs distributed throughout the AIN 10, are connected via respective data links to the SMS 46. The SMS 46 provides a centralized platform for remotely programming the various AIN SCPs of the AIN 10 so
5 that a coordinated information processing scheme may be implemented for the AIN 10. The SMS 46 is implemented by a large general purpose computer and interfaces to business offices of the local exchange carrier and interexchange carriers. SSPs download, on a non-real time basis, billing information to a billing system 50 that is needed in order to appropriately invoice subscribers for the services provided.

10 The AIN SCP 42 is also connected to a caller ID with name (CNAM) database 46. The CNAM database comprises a plurality of directory numbers along with associated names for the directory numbers. The CNAM database may be used to provide a look-up database to provide caller ID service. The CNAM database may comprise directory numbers from wireline customers as well as wireless customers of
15 wireless network 150.

In operation, the intelligent network elements of the AIN 100, as described above, communicate with each other via digital data messages transmitted over the network of digital data links. An SSP may be configured to interface with these network elements through the use of a trigger. A trigger in the network is an
20 event associated with a particular subscriber line or call that causes the SSP to generate a data packet message to be sent to a service control point. In order to keep the processing of data and calls as simple and generic as possible at central office switches, such as SSP central office switches 12 and 14, a relatively small set of triggers are defined at the SSP central office switches for each call.

25 For preparation of billing information, the subscriber's telecommunications service provider is generally responsible for maintaining records for both local and long distance wireline and wireless services and producing billing statements for individual subscribers. The billing system 50, otherwise known as a call accounting system, includes computer systems, memory storage, software, and some
30 mechanical methods for connection to the telephone network described with respect to

Fig. 1. A billing system 50 is used to record information about the telephone calls, organize that information, and upon being asked, prepare statements related to subscriber use of telephone services. The information recorded or captured about telephone calls includes all information required to prepare periodic billing statements 5 to subscribers for use of telephone services. Representative information includes type, date, time, duration, originating point and terminating point for telephone calls combined with subscriber information such as calling plan information, discounts provided to a subscriber, and the like.

The billing system 50 produces these billing statements, which are 10 typically mailed to subscribers on a periodic basis. Information may be downloaded from the SSP 12 to the billing system 50 in association with the preparation of the billing statements. The operation of a billing system of a telecommunications service provider, such as the billing system 50, is well-known to those skilled in the art.

It will be appreciated that the billing system 50 may prepare records for 15 each subscriber on a per communication basis. The originating switch that serves the subscriber's line typically creates these per communication records for a particular subscriber. Preferably, the AIN central office switches, such as SSPs 12, 14 create call detail records (CDR) that contain information on outgoing and incoming phone calls, including originating and terminating parties, originating and terminating destination, 20 time of day, day of the week, duration of the call, type of call (wireline or wireless), and the like. Additionally, the call detail records typically contain call disposition information (e.g. answered, busy, etc.). The per communication call detail records created by the SSP 12 for the subscriber line 18 are periodically downloaded to the billing system 50 on a non-real time basis. The billing system 50 computes the costs for 25 the communications represented by the various records and prepares billing statements to be mailed to the subscribers.

The wireless network 150, such as a cellular network, comprises a mobile switching center (MSC) 52, 57. The MSC 52 is a switch providing services and coordination between wireless users in network 50 and external networks. The MSC 52 30 may be connected to STP 34 to provide information to the wireline network and receive

information from the wireline network. The MSC 52 also communicates with a wireless subscriber, such as wireless telephones 54 and 55. For preparation of billing, the MSCs create call detail records (CDR). The call detail records created by the MSCs are transmitted to the billing system 50 for preparation of periodic wireless subscriber
5 billing.

The MSC 52 may also be connected to a home location register (HLR) 56. The HLR is an SS7 database used to identify/verify a wireless subscriber. The HLR also comprises data related to features and services subscribed to by the wireless subscriber. The HLR is also used during roaming to verify the legitimacy of the
10 subscriber and to provide him with his subscribed features. The HLR 56 may also be connected to the STP 34 and/or SCP 42 of the wireline network.

Fig. 2 is a block diagram illustrating the system architecture of an exemplary embodiment of the present invention. As shown in Fig. 2, a call detail record 110 and a subscriber record 115 are utilized in the billing system 50 for creating
15 a periodic billing record 120. The call detail records may contain per call information received from the switch 12 each time a subscriber utilizes the telephone services from her telephone 21, as illustrated in Fig. 1. Alternatively, where the subscriber is utilizing wireline services from a wireline telephone set 55, the call detail record may be generated at the MSC 57 and transmitted to the billing system 50. The subscriber
20 record 115 contains information related to the subscriber's telecommunications service plan including the particulars of any calling plans utilized by the subscriber, any discounts provided to the subscriber (not including the discounts provided by the present invention), and the like.

As is well known to those skilled in the art, on a periodic basis, for
25 example, monthly, the billing system 50 generates a periodic billing record 120 for the preparation of billing to forward to the subscriber for use of the prescribed telecommunications services. Typically, a periodic billing record 120 contains information including the call type, the duration of the call, the jurisdiction of the call, the day and time of the call, the originating number and the called number, the
30 undiscounted cost, any discounts, calling plan and other subscriber information, and any

applied discounts. It should be understood, that the periodic billing record 120 may contain other information that is necessary to prepare bills to subscribers for their use of telecommunications services. The jurisdiction of the call includes information regarding the originating point and the terminating point of calls made by the 5 subscriber. The call type may include information, including wireline long distance services, wireless services, calling card calls, assisted calls, etc.

The conference call discount feature engine 130 is a software module containing instructions executable by a computer or other electronic device suitable for analyzing information from the periodic billing record 120. In accordance with an 10 exemplary embodiment of the present invention, the conference call discount feature engine 130 extracts information from a periodic billing record 120 and determines whether there are overlapping long distance calls for a particular telephone line. Overlapping long distance calls are those originated from the same telephone line and including overlapping time periods. For example, suppose there are two long distance 15 calls from 555-555-1111; a first call with a time period beginning at 1:00 PM and ending at 1:07 PM on January 1, 2001; and a second call with a time period beginning at 1:00 PM and ending at 1:05 PM on January 1, 2001. The first and second calls are overlapping calls between 1:00 PM and 1:05 PM (during which a conference call was being conducted). The engine determines the overlapping call with the lowest long 20 distance call charges and provides a discount to the call with the lowest long distance charges. The engine then saves a new periodic billing record 120.

Having described an exemplary operating environment and the system architecture for the present invention with reference to Figs. 1 and 2, a flow diagram illustrating a method 300 for providing a multiple line long distance discount feature is 25 described with reference to Figs. 1, 2 and 3.

The method 300 begins at step 305 and moves to step 310 where information on the subscriber (customer) such as the subscriber's billing plan and any discounts (other than those provided by the present invention) or special services provided to the subscriber are stored in the subscriber records 115 of the billing system 30 50. At step 315, the switch 12 to which the subscriber's telephone 21 is functionally

connected, as described above, prepares call detail records for each call made by the subscriber. As should be understood, a call detail record is made for each call whether the call is a local wireline or long distance wireline call, or whether the call is a wireless call made from a wireless handset 54 through an MSC 52, as described with reference 5 to Fig. 1. It should be further understood that, when a subscriber initiates a conference call with two or more parties that two or more call records are generated for the conference call (one for each party that the subscriber calls).

At step 320, the switch 12 routes the call detail records to the billing system 50 for subsequent preparation of periodic billing records and bills to be 10 forwarded to the subscriber for the subscriber's use of the telecommunications services. At step 325, the billing system 50 prepares the periodic billing record 120, as described above. At step 330, the conference call discount feature engine 130 obtains a periodic 15 billing record 120 for the subscriber's billing telephone number (BTN). A BTN is the primary telephone number used for billing regardless of the number of telephone lines associated with that number. Multiple working telephone numbers (WTNs), or working 20 telephone lines, can be associated with a single BTN. Typically, the BTN is a seven digit number with the area code followed by the alphanumeric code assigned by the local telephone company (e.g. NPA-NXX-XXXX). Of course, it should be understood that, in some embodiments of the invention, the periodic billing record may be associated with only one telephone line/number rather than multiple working telephone numbers.

At step 335, overlapping long distance usage is determined for one of the working telephone numbers.

At step 340, the overlapping long distance call with the most expensive 25 long distance charges is discarded from consideration and the long distance charges for one or more of the remaining overlapping long distance call charges are discounted by a predetermined amount. Typically, the discounts applied at step 340 will be in addition to any discounts already provided in the customer's regular calling plan. So, the customer is receiving additional cost savings and the service provider maintains good 30 will with the customer.

At step 345, the new periodic billing record is saved, including any discounts computed at step 340. In a preferred embodiment, the original long distance bill and the discounted long distance charges are both saved so that the bill sent to the customer shows the customer's added savings. The method ends at step 399.

5 In one embodiment, this invention provides a customer with a discount on their long distance usage when the user invokes a conference calling feature while on a long distance call in order to originate a long distance call to another party. The call detail records are examined to determine when two or more long distance calls have overlapping call durations that are originated on the same telephone line. The
10 overlapping call with the shortest duration (or lowest cost) of long distance service will be discounted in addition to the normal or existing long distance calling plan discounts that apply.

It should be understood that the present invention may encompass many different embodiments that will be clear to those skilled in the art. In particular, the
15 discounting function of the present invention may take many different forms. In one embodiment of the invention, the discount is only applied to the lowest long distance charge. However, in other embodiments of the invention, the discount may be applied to the highest long distance charge, all of the long distance charges, all but the highest long distance charges, all but the lowest long distance charges, etc.

20 In a preferred embodiment of the invention, the discount applied is a predetermined percentage. For example, the lowest long distance charge may be discounted five percent. Of course, the discount percentage may be incremental depending on the number of long distance phone charges in the conference call, such as five percent for the highest long distance charge, six percent for the next highest long
25 distance charge, seven percent for the next highest long distance charge, etc. The discount percentage may also be incremental depending on the total cost of the long distance charge, if the lowest long distance charge is less than five dollars then the percentage may be five percent, if the lowest long distance charge is between five and ten dollars then the percentage may be six percent, etc.

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It should be understood that, in one embodiment of the invention, the present invention may only be implemented for subscribers who have subscribed to a conference call discount feature so that periodic billing records for all customers need not be examined (which may be burdensome). It should also be understood that the 5 long distance conference call discounts described herein are typically in addition to any long distance calling plan discounts already applied by the billing system.

In a preferred embodiment, the long distance conference call discount is displayed on the bill sent to the subscriber by the billing system 50 so that the subscriber may see the cost savings of using the conference call feature. Goodwill is 10 maintained with the subscriber because of the added savings. Also, long distance revenue is increased for the service provider because the subscriber has made two or more simultaneous long distance phone calls which all provide revenue to the service provider. Moreover, because of the added savings of using the conference call feature, more subscribers may pay the monthly fee for conference call service and further 15 increase revenues for the service provider.

It should be understood that, in a preferred embodiment, the same telecommunications service provider provides both the subscriber's local phone service and long distance phone service. In different embodiments, the present invention may also be implemented in a wireless network.

20 It should be understood that, in some embodiments, the long distance conference call discount capability may be accessed via a calling card and password so that a user may access this capability while away from their main telephone number.

As described herein, a system and method are provided for a long 25 distance conference call discount feature. It will be apparent to those skilled in the art that various modifications or variations may be made in the present invention without departing from the scope or spirit of the invention. Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein.